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This Writing Business

BY

D. W. JOLLY
Berkhamsted

Introduction

MOST graduates, and even some undergraduates, have the urge to write a technical paper. This desire to inform, astonish, or entertain one's professional colleagues is a worthy emotion and is usually encouraged, particularly by the editors of technical journals, and some directors of research stations. Like most forms of human endeavour, the writing of a technical paper is subject to rules, conventions, and laws. The fact that many of them are unwritten makes them none the less binding.

The reader of a technical article expects to be rewarded for his industry by some item of information. It is generally considered unsporting to lure him into a morass of confusion and leave him baffled and unhappy. The modern reader likes to have his technical material presented in a concise form, simply written, and introduced by a good review of the subject. All journals, even technical ones, are published to be read, and editors like to satisfy their customers. The author of a technical article has to satisfy the editor.

Having decided that the subject, and the object, of his paper are worth the effort, the budding author must classify his offering as "scientific" or "clinical," search for a title, and if necessary arrange the order of his co-authors.

Titles

Nice little girls all over the world may have to type the title of the article on reference lists and index cards. Librarians will study the title in an attempt to classify the subject of the article into its appropriate branch of our science. For these reasons if for no others, it is only fitting for a profession dedicated to the relief of suffering to keep titles short and informative. The use of sub-titles or a division of the article into parts, may help to simplify the task of finding a label for a complicated contribution.

Authors

Although, officially, there is no limit to the number of co-authors there may be repercussions if the list soars into double figures. In these days of research teams the arrangement and precedence of the authors requires tact and diplomacy. Once the first-named author has been selected, elected, or even dictated, it is sometimes advisable to arrange the remainder of the team in alphabetical order. Nevertheless, however distinguished the company, all but the first-named author lose their identity and become "*et al.*," when quoted in the text of future papers.

The Scientific Paper

Scientific papers are contributed by research workers. Imprisoned in his ivory tower, and surrounded by the tools of his calling, the research worker has no easy way of showing his prowess except by his pen. Technical journals are thereby the market place in which he offers his wares. At the moment it is a buyer's market, and therefore the research worker must offer to the reader, and to the editor, a well-polished product.

A play is divided into acts and scenes. A scientific paper is usually arranged in four parts.

1. *The Introduction—setting the scene*

To ensure that their material is understood by a wide spectrum of the general public, journalists pretend that they are writing to a simple-minded relative. Some research workers, however, favour the opposite approach, and project their offerings into such a rarified atmosphere of learning that only the initiated few can appreciate the message. Now while the average reader of a technical journal is

no moron, veterinary science is a wide subject, and memories are short. In his introduction, therefore, the author should gently lead the reader into his own world of learning, to meet therein the personalities, the problems, and the triumphs.

There should be a general historical review of the subject with a more detailed account of recent developments. A little drama can then be injected into the affair by defining the purpose of the investigation, with reference to the problems and the difficulties.

2. *Methods—the tests and observations*

Our elders favoured the blow by blow description of their methods to allow, and encourage, the sceptic to try for himself. The modern sceptic, which should include all research workers, will accept a synopsis of the methods provided the salient factors are included. In fact the gentleman wants to be assured that the quantity and quality of the tests and observations would satisfy him if he had been the experimentor.

3. *Results—the evidence*

This part of the paper should give the evidence obtained from the experiments accurately, concisely, and with the minimum of padding. Biological experiments almost always have their flaws. Test animals die inconveniently from unidentified causes, and cultures become contaminated. The writer need not emphasise these imperfections, but they should not be concealed: they may assume importance later. However, apologia and explanations should be left until the "Discussion."

The results should be shown very clearly, for which a simple Table is often best. Immediately after the Table, the main findings demonstrated by it (in the opinion of the author), should be firmly stated, *i.e.* "nineteen out of twenty treated animals survived, while all the twenty untreated animals died."

When presenting the results of any experimental work it is probably best to assume that the reader has a mental age of eight or nine, preferably eight. This is not intended as an insult to a distinguished body of men, but merely a suggestion to counter the effect of working in a specialised field. Veterinary helminthologists, for example, can overlook the fact that their professional colleagues in other walks of life may have forgotten that e.p.g., means eggs per gramme of faeces.

4. *Discussion—gossip*

The reader should now have reached a sufficient state of enlightment to be able to follow and appreciate the acuity of the thoughts and hypotheses of the author. It is as well at this stage for the author to remind the reader (and perhaps himself), of the purpose of the investigation. The significance of the results will require elaboration, and discrepancies must be explained, while imperfections in the methods should be noted.

In his Discussion the author can indulge in speculations, advance his theories, and make prophesies. He can even suggest a programme for future work, and thereby ensure his future employment.

Finally the pros and cons of the evidence obtained from the results should be reviewed, and judgment pronounced. Some more confident, or less modest, authors, prefer to present this judgment of their work in a special section labelled "Conclusions."

The Clinical Paper

Clinical articles describe an encounter with a phenomenon, natural or unnatural. They are written usually for, and by, the veterinary surgeon in practice, and offer practical advice to practical men. The clinical article is often conceived while waiting, for instance, for traffic lights to change, and brought to blossom in the late evenings with the day book at hand.

Good clinical articles are always welcome because they often contain information of interest to all sections of the profession, and they leaven the academic dough of the research worker. The editor of a professional journal appreciates these facts, and the author of a clinical article is allowed much licence in the presentation of his offering, if the subject matter is good.

Clinical articles are best arranged as "Introduction," "Case History," and "Discussion." The Introduction should explain the reasons that induced a busy practitioner to take up his pen. A short explanation of the unusual and outstanding features of the case is helpful, for although these may be obvious to the surgeon in practice, they may not be so to a bench-bound research worker. There are two ways of presenting a case history:

1. (a) History.
   (b) Clinical examination, in which is included the results of any elaborations thereof such as blood, faecal, or bacteriological tests.
   (c) Treatment.
   (d) Post treatment, or *post-mortem*, examinations.

2. The case is described as it happened in chronological sequence, each incident being prefaced by the time and day. Dramatic episodes of short duration, such as cases of poisoning, provide good material for this type of presentation. The reader can savour the suspense of the occasion, and appreciate the problems, and diagnostic ability of the author.

In his Discussion the author can belabour unsatisfactory products, criticise methods of treatment, farmers, the Government, and offer some constructive advice.

Reviews, Surveys and Miscellaneous Papers

Good reviews may not always be accepted as things of beauty, but they are a joy for all sections of the profession and very nearly for ever. Like descriptions of techniques and other valuable contributions, reviews do not always lend themselves to classification or a conventional presentation. Nevertheless, most of such papers can be sandwiched between a brief Introduction and a short Discussion.

Acknowledgments

The completion of a piece of research work, and the preparation of the report which follows, require financial, material, and personal aid from a number of people. Although opinions may be divided as to

whose assistance should be acknowledged, the help of specialists such as statisticians must receive mention—even if they do consider one's findings are "not significant."

It is also a gesture to acknowledge the receipt of animals, drugs, and equipment if provided without charge. Lastly, those who are subsidised, supported by grants, or by commercial concerns should express their indebtedness to their sponsors for permission to publish.

References

References acknowledge the source of significant, important, and useful items of information used in a technical paper, they are also useful as an umbrella for controversial statements. References, thereby, form a service for the reader, and incidently offer a tribute to one's colleagues in the same business. Authors are well advised, though, to show some restraint in this presentation of compliments, and limit their references to the more recent and more significant findings. An exception can be made, however, in the case of a pioneer worker in the subject, particularly if he happens to be your director of research.

The name of the first-named author of the group to whom the finding or statement is attributed is noted in the text, together with the date of the publication. Details of the co-authors, year, journal, volume, number, and appropriate pages are placed in a section at the end of the paper.

Journals are accorded official abbreviations which are contained in the "World List of Scientific Periodicals." A search through the references in the relevant technical journal, however, will usually provide the necessary information to guide the author in the correct layout of his References.

Summaries

In deference to the modern trend for speed, and the increasing volume of published research work, the author is required to concentrate the essentials of his work into a necessarily unpalatable and undigestible fragment called a "Summary." The purpose of a summary is to encourage the interested colleague to read the paper, as well as to save the busy, and the idle, from this exercise.

Photographs, Graphs, Drawings

The quality of the reproduction of photographs is unpredictable, and can be a source of sorrow. Unless the author has a rich sponsor and is able to barter with the editor for art paper reproduction, photographs are best saved for an album. Whether the paper is art or not, the detail and quality of the picture must be superb, and its message plain.

Simple graphs and line drawings are usually satisfactory to reproduce, although their placing within the text can be a cause for argument between author and editor.

The Paper and the Editor

When a paper has been written, re-written, criticised by a colleague and written again, it should be typed with double spacing on one side of good quality paper. This last recommendation is to ensure that the article is not shredded while being mauled in its passage between the author, editorial staff, the Reader, and the printers. A wise author also keeps at least one carbon copy. On arrival upon the editor's desk the paper is perused and sent for study to the appropriate Reader, who is one of a group of learned gentlemen acting as consultants to the editor.

The reputation, circulation, and success of a technical journal is related to the quality of its contents. The Reader is required to ascertain that the paper is fit for publication and advise the editor accordingly. In the exercise of this duty the Reader may, and often does, make comments and suggestions which he believes will improve the presentation of the paper. Some authors are hurt when their papers are subjected to correction and criticism; but they should be comforted by the thought that the Reader has obviously decided that the time and labour he has spent in his misguided attempt to improve their contribution is worth while. Furthermore, his comments might even be right.

Papers deemed unsuitable for publication are always referred to a second, and sometimes a third Reader.

Galley Proofs

Some time after the acceptance of his paper, the author will receive a bundle of strips of paper, technically known as "galley proofs," which he will be asked to correct and return promptly. The author is now faced with the ordeal of reading his contribution laid out in "cold" print, which is frequently a disturbing experience. Nevertheless, the urge to amend, add, or subtract from the text should be resisted. The printer has little margin for latitude, and may have to re-set one or more pages if amendments are prolific. Any drastic re-arrangement of the text is, therefore, decidedly unpopular and can be expensive in time and money.

Genuine mistakes in galley proofs are seldom obvious until the article has been published when they become very plain, and even more permanent. Galley proofs must, therefore, be checked with care, particularly the Tables, titles, and references.

Professional copy readers make use of a system of signs with which they communicate with the printer. Amateur copy readers are advised to restrict their artistic ability to a simple circle around the offending word or phrase, and to write the correction in the margin.

Reprints

At this stage the author is required to estimate the number of reprints which he will require, and for which he must pay. Reprints are separate copies of one's article which are sent with pert or courteous comments to friends or influential acquaintances. In addition to these unrequested and often unrequited gestures, the author will receive reprint requests in the form of postcards in five languages from improbable places. Much later, usually after the last reprint has gone, come the complimentary letters requesting reprints from one's more distant colleagues. In the long run, therefore, it is probably better to celebrate the occasion and order a hundred or so at the beginning. They can always be bequeathed to one's grandchildren.

An Outbreak of Bovine Mastitis caused by *Streptococcus pneumoniae*

BY

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and

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SUMMARY.—A severe outbreak of acute mastitis due to Streptococcus pneumoniae *type III affecting 6 of 25 cows in a British Friesian herd of cattle is described. Systemic administration of penicillin was a satisfactory form of treatment.* Strep. pneumoniae *type III was isolated from the throat of the cowman who was considered to be the source of infection.*

BOVINE mastitis due to *Streptococcus pneumoniae* (pneumococcus) in Britain has been recorded on one occasion only (Wilson & Lancaster, 1949). They described 2 cases in one herd and referred to previously reported cases in Estonia (Roots & Karlson, 1931) and in Canada (Schofield & Swan, 1945). The outbreak described here has been recorded because of the comparative rarity of the condition and because the cowman was found to be the probable source of infection.

This outbreak occurred in a Friesian herd of 25 milking cows kept in a half-covered yard and milked twice daily, by machine, in an adjoining shed. Milking was performed by a single attendant; hand stripping was not practised.

Description of Outbreak

The first case occurred on January 20th, the second on January 29th and a further 3 on February 4th, 1958. After this date, preventive measures were instituted to reduce further transmission and, apart from relapses, no fresh cases occurred until March 13th, when another cow contracted the infection. This was the last case.

All affected cows exhibited a similar clinical syndrome. They had calved 1 to 3 months previously and each was yielding approximately 5 gallons of milk per day. The onset of disease was sudden and was characterised by a sharp drop in the milk yield followed rapidly by the udder becoming acutely swollen and secreting watery fluid containing large clots. This fluid possessed no pronounced smell. Generally, the mastitis commenced in one quarter but others became affected very rapidly, often within a few hours; in 4 cows all quarters were affected, in 1 cow 3 quarters and in the remaining cow 2 quarters only. The cows evinced pain, were reluctant to move and walked with their hind legs splayed outward. Rectal temperatures varied from 104 to 108° F., respiration rate was increased and appetite greatly reduced.

Treatment

Laboratory aid was not sought until February 4th when the 3 fresh cases occurred. These and the 2 earlier cases were given one 33 g. dose of sulphadimidine subcutaneously and a course of 3 daily intramammary injections of 100,000 units of procaine penicillin. This therapy had little effect on the course of the disease nor did intramammary injections of 100 mg. of oxytetracycline hydrochloride. When the diagnosis of *Strep. pneumoniae*, type III, mastitis was established, all 5 affected cows, and the one that became affected subsequently, were given 6 daily doses of 3 to 5 million units of sodium penicillin G intramuscularly. This, unlike the local therapy, had a very beneficial effect on the general health of the cows as well as on the mastitis. Within 10 days of the commencement of this treatment, the udders and milk of all the cows appeared normal. Their milk yield, however, did not rise above 2½ gallons per day for the remainder of the lactation; one cow ceased to yield any milk.

Laboratory examination of milk samples after systemic penicillin treatment revealed that only two cows were still excreting a small number of *Strep. pneumoniae* in their milk. These two suffered severe clinical relapses, one on February 17th and one on March 13th. Both responded rapidly to a further course of penicillin given intramuscularly. Subsequently, all the quarters of both cows were given 3 daily injections of 100,000 units of procaine penicillin in an attempt to eradicate infection. One of these 2 cows had a further relapse and was slaughtered because of marked loss of condition and damage to the mammary tissue. The other cow recovered and *Strep. pneumoniae* was never again found in its milk. Laboratory examination of individual milk samples from the herd at the height of the epidemic on February 6th indicated that infection was confined to the clinically affected cows. Repeat examinations at the end of the outbreak showed that all the cows in the herd were free of infection.

Source of Infection

Throat swabs from the cowman and 3 farm workers not closely connected with the dairy but who consumed raw milk from the herd were examined bacteriologically on February 12th and 22nd. *Strep. pneumoniae*, type III, possessing identical cultural and biochemical properties to those from the infected cows, were isolated in plentiful culture on both occasions from the cowman; they were not found in the swabs from the other 3 workers. The cowman was given 6 daily injections of penicillin by his medical practitioner; 2 days after this therapy no *Strep. pneumoniae* were isolated from his throat.

Bacteriology

Large numbers of leucocytes and ovoid gram-positive cocci arranged in pairs and with well developed capsules were seen microscopically in stained smears of milk secretions from affected cows.

Strep. pneumoniae were isolated in pure and plentiful culture on blood agar plates inoculated with affected milk and incubated at 37° C. in an atmosphere of 95 per cent. hydrogen and 5 per cent. carbon dioxide. The organisms were not recovered on primary blood plates incubated aerobically. Their identity was confirmed at the Streptococcal Reference Laboratory, Colindale, London, N.W.9 where the isolates were classified as *Strep. pneumoniae*, type III.

Further studies indicated that an atmosphere of carbon dioxide and/or hydrogen was not essential for the growth of the particular strains of *Strep. pneumoniae* involved in this outbreak but that a moist atmosphere, such as is obtained in an anaerobic jar, was required. Their failure to grow initially aerobically might have been due to the fact that well-dried plates were employed and that the incubator atmosphere was rather dry.

All the strains isolated in the present study grew as α-haemolytic "draughtsman" colonies on blood agar, considered typical of *Strep. pneumoniae* in general. Occasionally, under very moist conditions, large watery mucoid colonies considered typical of some type III strains only developed. All the strains were bile soluble, a test found most useful in the present investigation for provisionally identifying cultures of *Strep. pneumoniae*.

Sensitivity to Chemotherapeutic Agents

The minimum inhibitory concentrations of chemotherapeutic agents for the strains of *Strep. pneumoniae* isolated from the cows' milk and from the cowman's throat were: penicillin, 0.04 units per ml.; oxytetracycline, 0.5 μg. per ml.; chloramphenicol, 10 μg. per ml.; streptomycin, 40 μg. per ml.; and sulphadimidine, 2.5 μg. per ml.

Pathology

Macroscopically, the principal change found in the udder of the slaughtered cow was one of extensive fibrosis; this was confirmed histologically. The glandular acini had been almost completely replaced by fibrous tissue rich in leucocytes, macrophages and plasma cells in the region of the glandular ducts and the few degenerating acini that remained.

Acknowledgements.—We are grateful to Dr. R. E. O. Williams of the Streptococcal Reference Laboratory, London, N.W.9 for typing several of the strains of *Strep. pneumoniae* and Mr. A. Harman for his capable technical assistance.

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A Herd Outbreak of Mastitis Associated with *Streptococcus pneumoniae* Infection

BY

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and

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SUMMARY.—A serious outbreak of mastitis involving half the cows in a herd of 49 is described. The outbreak was undoubtedly spread by milking uninfected after infected cows and only one fresh case occurred in the clean section of the herd when the known clinical cases were removed from the herd. The causative organism was a Type III pneumococcus and was peculiar in its growth requirements in that it would only grow in CO_2 in our Laboratory media. It was subsequently shown that it grew quite well aerobically when another brand of peptone was used.

Treatment of well-established cases did not succeed in restoring milk-yield but early cases responded well to large doses of penicillin given via the teat canal. One cow treated with penicillin injected intra-muscularly showed a good recovery.

It was not possible to trace the source of the outbreak but it may have come from a milker who had left the herd a month prior to the occurrence of the outbreak and who was not available for examination.

BOVINE mastitis due to *Streptococcus pneumoniae* is not common in this country, the only published evidence being of an outbreak which affected 2 cows in a Jersey herd (Wilson & Lancaster, 1949). Outbreaks have also been reported in other countries; in Estonia (Roots & Harlson, 1931), in Canada (Schofield & Swan, 1945) and in Norway (Eieland, 1952). The outbreak which is recorded below is noteworthy because a large number of cattle were affected in one herd with devastating results to the milk-yield.

History

A herd of 49 Guernsey cattle was suffering from periodic outbreaks of mastitis at the beginning of 1957 (11 cases in 3 months) and the examination of milk samples disclosed a variable infection, some showing *Streptococcus dysgalactiae*, some *Staphylococcus pyogenes*, while a few were sterile.

In April there was a marked increase in the incidence of clinical mastitis and the cases were much more acute in character. There was general systemic disturbance with the temperature varying between 102.8 and 104.5° F. The affected quarters were hot and painful, the secretion was greatly reduced, usually yellow and either pus-like or of an oily consistency. Quite apart from the affected quarter, the milk yield from the non-infected quarters was affected and cows giving 4 gallons gave only a few pounds even when only one quarter was clinically affected. Eight cows were affected in the first

outbreak and 2 days later a further 9 cases occurred. Many of these were sterile in primary aerobic culture. By the time an accurate diagnosis was made there were 20 animals which were infected, most of them with permanently damaged udders.

At this stage the herd was divided into 2 groups, a clinically normal group and a group which contained all the known infected cows. The clean group was milked by machine while the infected group was hand-milked by staff who had no connection with the healthy group of cows. This had the immediate effect of controlling the outbreak and although one further case occurred in the healthy section of the herd, it was treated promptly and no further cases developed in this group.

Bacteriology

Although many of the cultures made from the infected secretions were sterile when grown aerobically at 37° C. for 48 hours on 5 per cent. sheep-blood agar, numerous cocci and short-chained streptococci could be seen in films prepared from the milk. Accordingly fresh plates were incubated in CO_2 and after 48 hours a profuse growth of typical "draughtsman" colonies was seen on the plates. These colonies were identified as pneumococcal by demonstration of their bile-solubility and their ability to kill mice when broth cultures were inoculated intraperitoneally with the recovery of capsulated diplococci from the heart blood of the mice.

Cultures from 4 of the cases were sent to the Streptococcal Reference Library at Colindale who reported that all were Pneumococci Type III.

It was subsequently shown that the growth requirements of this strain of pneumococcus were affected by the peptone contained in the medium and when the peptone was changed the organism grew quite freely aerobically.

Source of Outbreak

Swabs were taken from the throats of all who were working on the farm and while 2 men were found to be carrying pneumococcal infection in their throats, they were of a different type to the one causing the mastitis. A cowman had left only a month before but as he was now employed in a job quite unconnected with cows or human food it was not considered politic to examine him. Therefore the sources of the infection remains a mystery.

Treatment

Prior to the final identification of the cause of the mastitis, treatment had been carried out with various intramammary preparations with indifferent results. Because of the delay in diagnosis of the causative organism only a few acute cases were available for treatment.

It was decided that any fresh cases which occurred would be treated with 5 mega units of penicillin intramuscularly daily for 3 days, but only one case was so treated. This cow responded well but not any better than *recent* cases treated with intramammary penicillin.

Most of the cases were treated by one of two methods. Some were treated with a mixture* of erythromycin, streptomycin and sulphanilamide suspended in an oily vehicle and infused into the udder daily for 3 days. Provided the case was treated early enough it proved effective but had the disadvantage of being irritant and some cows showed blood in the milk. With the more chronic cases the results were disappointing and many cows were still infected even after treatment.

The remainder of the cows were treated with 300,000 units of penicillin plus approximately 1 Anson unit of purified trypsin† injected *via* the teat-canal and repeated after 7 days. This treatment produced a complete recovery in the early cases but where there was chronic infection with grossly altered secretion, while the quarters became softer and the secretion more normal in appearance the quarter was almost non-functional and gave practically no milk. In a number of cows, fresh quarters developed mastitis subsequent to an attack in another quarter. These recent acute quarters were treated with 300,000 units of penicillin only and in each case the quarters responded satisfactorily to this treatment with little or no loss of milk.

Discussion

This outbreak of mastitis was of a very fulminating type, half the cows in a herd of 49 becoming affected with a very acute mastitis within a few days and with catastrophic effect on the milk yield.

Previous reports of outbreaks of this infection in mastitis have been confined to cases in which only a small number of cows was infected. It is probable that the greater number of cases occurring in this outbreak stemmed from the fact that the hygiene in this herd was of the poorest. The first cases occurred in the low-yielders and it was discovered that in the afternoon the low-yielders, whether clinically infected or not, were milked first. It is little wonder that so many of the cows became infected.

Treatment of this condition is not difficult provided it is administered quickly enough but if it is delayed the loss of milk is considerable and the affected quarter is almost functionless for that lactation. The evidence available suggests that the damage is not permanent and that in subsequent lactations the yield from the affected quarter is not seriously impaired. In the outbreak described, however, many of the cows dried off prematurely and were going to be dry for so long that it was not considered economical to keep them.

Penicillin will always be the antibiotic of choice for this infection since the pneumococcus is invariably sensitive to penicillin but the route of administration and the size of the dose may influence recovery. Only one case in this outbreak was treated with large doses of penicillin intramuscularly and with satisfactory results but the intramammary route was found to be satisfactory provided treat-

* Sulvetil (Abbot Laboratories).

† Trypvet (Evans Medical Supplies Ltd.).

(*Concluded at foot of adjoining column*)

The Role of *Bacterium viscosum equi* in the Causation of Equine Disease

BY

L. C. MAGUIRE

Kells, County Meath

SUMMARY.—An account is given of the pre-parturient and multiple vaccination of mares to produce immunity in the new-born foal.

Reference is also made to the various pathological conditions thought to be associated with Bact. viscosum equi *infection. The information is based on 45 years' clinical work and 30 years' experience as a stud owner and breeder of bloodstock.*

Introduction

BACTERIUM viscosum equi is a gram-negative organism which was first isolated by Theiler and described by Meyer (1908) in South Africa in cases of purulent nephritis in equine animals and was called *Bacillus nephritidis equi*. It was described by Adersen in 1916 in Denmark as important in joint-ill in foals and was recorded by Magnusson (1919) in joint-ill in foals and horses in Sweden under the name *Bacterium viscosum equi*. Edwards (1931) has reported on a number of American strains of this organism and stressed the serious nature of the infection for the young foal. In 1932 Edwards recorded that these strains formed a heterogeneous serologic group. Dimock and Edwards (1932) discovered this organism occasionally in aborted foals but more commonly found streptococci. A review of joint-ill in foals has been given by Gunning (1947).

Other names applied to this organism include *Shigella equirulis, Shigella viscosa, Bacillus equirulis,* and *Bacillus pyosepticus equi*. It is related to the Friedlander group and is now widely recognised as an important septicaemic invader in young foals, derived from either pre- or post-natal infection. In equine animals it is commonly found associated with kidney lesions, but it may affect other farm animals. It does not appear to be a very resistant organism and is easily killed by drying and disinfectants.

The Clinical Disease

Infection produces 3 forms of the disease. First, acute, mostly confined to foals from birth to 2 months old. Second, subacute, attacking foals from birth to 6 months old. Third, chronic, the commonest form found causing disease in equine animals of all ages greater than 6 months old.

The Acute Disease

The acute infection in new-born foals is associated with a septicaemia and in such cases it is undoubtedly a pre-natal invasion. In many cases the foal is born in a moribund condition and if death does not occur within a few hours of birth the foal lapses into the condition known as the "sleepy" foal, or into one of the subacute forms.

The Subacute Disease

The subacute form of infection produces a variety of conditions and may result from either pre-natal or post-natal infection. It is rarely seen in animals over the age of 6 months; such conditions as joint-ill, pleurisy, peritonitis, and nephritis belong to this category.

The Chronic Disease

The chronic forms are insidious in onset, and infection is usually contracted by the ingestion of contaminated food. From a clinical standpoint it is often very hard to diagnose, as one gets a variety of conditions, such as connective tissue infection, articular and peri-articular inflammation, osteo-arthritis, bursitis, tendonitis, nerve infections (in which case there is a predilection for certain nerves, where only the motor fibres are impaired), chronic pyaemic nephritis, chronic bronchitis, chronic pleurisy, and infections of the generative organs leading most likely to sterility. As mentioned above this is the commonest form of the disease and is found in equine animals of all ages above 6 months.

With the exception of bronchitis, pleurisy, and nerve infections, the primary sign of the chronic disease is, in the author's opinion, lameness. This lameness is at first occult and generally intermittent. However, in the case of articular and peri-articular

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A Herd Outbreak of Mastitis Associated with Streptococcus Pneumonia Infection—*Concluded.*

ment was given early enough. The role of the trypsin in treating these cases is hard to assess. It was used with the object of helping to penetrate the pus barrier and while no strict controls were kept, cows which were treated with the erythromycin preparation did not respond so well in the chronic cases nor did the induration disappear so quickly.

The outbreaks of mastitis reported in this country have all been due to a Type III pneumococcus but of the two cases reported by Eieland one was due to a Type XV and the other to a Type XIX pneumococcus.

Acknowledgments.—We should like to acknowledge our appreciation of the help of Dr. J. E. Haine and his staff of the Guildford Rural District Council in examining the farm employees and also of Dr. R. E. O. Williams of the Streptococcal Reference Library in typing the organism.

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osteoarthritic infections as the disease advances the changes become obvious to the clinician. Osteoarthritis is chiefly confined to the fetlock and elbow joints. In the former bony enlargements form on the distal end of the lateral surfaces of the large metacarpal and metatarsal bones. In the elbow joints similar formations develop on the proximal end of the lateral surfaces of the radius, often at the junction of the radius with the ulna. In the case of connective tissue infections the only obvious signs are either recurrent lameness in one or more limbs, or if a definite lameness is absent there is an alteration in the animal's movement taking the form of altered and restricted action. The owner generally complains that the animal has lost its action for no obvious reason and to such an extent that the animal cannot perform its usual work. When any one or more of the synovial bursae of the limbs are involved there are obvious clinical signs of enlargement and distension. The animal may or may not be lame, but if lameness is present there is usually pain and tenderness when the affected region is palpated.

In the case of tendon inflammation diagnosis is difficult until there is an alteration in the normal outline of the limb. The condition is more commonly found in the hind-limb tendons, and almost invariably in the flexor perforatus and/or the flexor perforans. There is a sinking of the fetlock joint so that the animal is described as being "down on his fetlock joints." This is presumably due to impairment of the fibres of the tendon caused by the chronic inflammation, and therefore the condition takes a considerable time to become obvious.

The nerve conditions form a complex which has never been elucidated. The author believes that such conditions should be included in the pathogenicity of *Bact. viscosum equi* as hemiplegia and monoplegia of the vocal cords, commonly recognised as "whistling" and "roaring." Also, partial or complete paralysis of the popliteal nerves which induces a condition simulating patellar luxation; impairment of the lumbar nerves with signs identical with those of "ricked" or "sway" back. It is necessary to try to differentiate between an impairment produced by infection and one produced by trauma, as the latter is, in the author's experience, completely incurable. The infective conditions, on the other hand, respond well to modern methods of therapy. It appears that *Bact. viscosum equi* has a predilection for certain nerves and this may be due to particular strains of the organism. Records of all cases of nervous conditions have been kept from 1927 where this organism was thought to be involved. Blood from each animal has been examined serologically for evidence of the infection and in each case the results were positive. The animals involved in this investigation consisted of the following cases:—

Complete or partial hemiplegia of the vocal cords	100 animals
Partial paralysis of popliteal nerves	40 animals
Partial paralysis of lumbar nerves	35 animals

In approximately 10 per cent. of these cases there was also a positive result to an agglutination test for β-haemolytic streptococci. As this infection is frequently met with in equine animals and there is no proof that it is involved in any of these nervous conditions it is not thought that these 10 per cent. positive results are of direct significance. It may be that a β-haemolytic streptococcal infection may lower the animal's resistance.

Nutritional defects and alimentary parasites certainly appear to be important in varying the clinical manifestation of *Bact. viscosum equi* infection.

Disease of the generative organs of the male and female is frequently caused by *Bact. viscosum equi* infection, in the author's experience. It often consists of such morbid conditions as dystrophy of the vagina and cervix with a reduction in resistance which allows other pathogens to become established. Infections of the male often result in infertility or sterility from chronic orchitis, infections of the accessory genital glands, and even pyaemic nephritis and infections of the pudic nerve resulting in its partial or complete paralysis. However, the most serious condition found in the mare is that in which there are no manifest clinical signs and to all physical inspection she is perfectly normal and exhibits normal oestrous cycles. There is no difficulty in getting her in foal and she has a normal gestation terminating in a normal foaling. But, in about 90 per cent. of cases, the foal is diseased at birth and will reveal typical signs of infection at a very early stage. Such a mare is a carrier and can only be detected by using routine blood examination. The undetected infected mare is a most dangerous occupant of any stud for not only will her progeny be infected but she is very liable to infect other mares through the media of the urine and post-partum discharges.

Related Conditions

In 1957 and also 1958 Mahaffey and Rossdale have described a convulsive syndrome in new-born foals which they suspect may be associated with early ligation of the umbilical cord and subsequent blood deprivation in the foal. It is the author's belief that there is a close relationship between these cases and those in which there is a pre-natal infection with *Bact. viscosum equi*. The description of the syndrome by Mahaffey and Rossdale is consistent with those which are produced by a toxaemia of the central nervous system. The author has only encountered about a dozen cases in new-born foals where the signs agreed with those of the "barker" foal. In each case the mother was blood tested in every instance the test was positive for *Bact. viscosum equi*. Blood was taken from 4 of these foals, prior to sucking the mother, and in each case there was a weak positive agglutination reaction for *Bact. viscosum equi*.

Prognosis

Antibiotic treatment allows a good prognosis to be made with the exception of the acute condition in the new-born foal, which is so often moribund at birth, and the nerve infections in which the period of morbidity is unknown. It is clear that where infection has existed long enough to bring about complete destruction of a particular nerve there is no hope of successful treatment. This applies, in the author's view, especially to hemiplegia and

monoplegia of the vocal cords and to paralysis of the pudic nerves. In other nervous conditions, if treatment is applied before extensive damage has occurred, recovery is expected.

Treatment

Before antibiotics became available the acute disease was nearly always fatal. Drugs such as S.U.P. 36 followed by S.U.P. 468, and later the various sulphonamides, gave variable results. Penicillin is ineffective in the case of this gram-negative infection. Streptomycin is valuable, especially if combined with direct blood transfusion from the mother. Oxytetracycline* has been spectacularly successful in treating the subacute and chronic forms. No opportunity of using it on the acute form has yet arisen. It is recommended that intensive treatment using either streptomycin or preferably oxytetracycline should be adopted in order to create a high concentration in the patient's body, in fact until signs of toxicity appear, which of course may vary with individual animals. This intensive treatment is particularly necessary in chronic infection of connective tissue and nerves. It is the author's practice to give a course of vaccine subsequent to antibiotic therapy to prevent a recurrence of the infection.

Résumé of Results of Treatment

The author has treated 20 cases of hemiplegia of the vocal cords in the last 10 years. Twelve were unbroken horses whose ages ranged from 3 to 4 years and the infirmity was discovered only when they were being broken. It was, therefore, impossible to determine how long the condition had existed or what was the damage to nerves or the extent of atrophy of the crico-arytenoideus muscles. The other 8 horses were in training from the age of 2 years and signs were not detected until their 3-year-old season. In these cases an estimate could be made of the time elapsing from the discovery of the condition and the commencement of treatment. In fact, for these 8 cases, the average time was 3 months. Two out of 12 in the first category made a complete recovery, the remaining 10 showed no improvement. All 8 in the second category recovered completely. Of the total of 10 cases which responded to treatment, the average time from the onset of treatment until the disappearance of signs was 6 months. Several of the horses which recovered proved good winners and remained sound during their racing career, after which they were lost to the author. As is the author's routine these 20 animals were given a course of vaccine subsequent to the antibiotic treatment.

Prevention and Control

The author has, since 1914, adapted the vaccination of pregnant mares and cows to give protection to the new-born animal from *Bact. viscosum equi* and *Bact. coli* respectively. He may well have been the first to adopt this form of vaccine therapy in veterinary medicine and it is his opinion that a satisfactory result can be obtained in protecting the young animal in 95 per cent. of cases.

* Terramycin, Pfizer Ltd., Folkestone.

(*Concluded at foot of adjoining column*)

The Occurrence of the Rabbit Fur Mite, *Cheyletiella parasitivorax* (Megnin, 1878) on the Dog

BY

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SUMMARY.—Infestation of 4 dogs with a predatory mite, Cheyletiella parasitivorax *Megnin, is recorded and concurrent lesions of 5 human beings associated with these dogs are described.*

The probability of this mite being capable of living a parasitic existence is briefly discussed.

Introduction

THE mite, *Cheyletiella parasitivorax* (Megnin, 1878), one of the Trombidiid mites, is normally found on the rabbit, where it is said to feed on smaller mites, causing little or no inconvenience to the host. There are, however, a number of references to its occurrence on the cat and opinions differ whether it is the cause of a skin irritation on them and also whether it can be the cause of mange in man. Cooper (1946) suggests that none of the evidence presented to that time could be held to demonstrate that the parasite attacks either its human or other mammalian hosts, but other authors argued that circumstantial evidence is strongly in favour of the parasite being the cause of skin irritation in rabbits, cats, and man (Pillars, 1925; Olsen & Roth, 1947).

The parasite has been recorded on rabbits and cats (Hirst, 1922; Pillars, 1925; Ford, 1944), and there are two references in which the hosts were dogs

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The Role of *Bacterium viscosum equi* in the Causation of Equine Disease—*Concluded*.

The vaccine has been given to mares in a dose of 5 c.c. given on 6 occasions at weekly intervals beginning at the eighth month of gestation. In cows the 6 injections of 5 c.c. have commenced during the seventh month of gestation.

Acknowledgments.—Grateful thanks are given to Dr. Tom Hare who since 1928 has carried out all serological and cultural tests and supplied all the vaccines. Thanks are also due to Mr. R. A. Paterson of Pfizer Ltd., Folkestone, who has kindly supplied material for trial and has given advice about the use of the material.

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(Kuscher, 1940; Humphreys, 1958). Kuscher described the case, which occurred in Germany, and he suggested that the parasite was feeding on *Demodex canis*, which was also present on the animal, but that subsequently, in the areas where *Demodex canis* had been exterminated, it attacked the dog and caused scaly lesions. In the case described by Humphreys, in England, a careful search was made for demodectic, sarcoptic, and otodectic mites, but none were found.

The present communication concerns the finding of this parasite on 4 dogs with no known connexion between them, together with observations on concurrent skin lesions on the dogs and their owners.

Case Histories

Case 1. Surrey, December, 1955

A male poodle aged 3 months was purchased from a breeding kennel at which cats and rabbits were also kept, and within 14 days of purchase the dog developed an irritation of the skin. There was profuse exfoliation of epidermis, so that the whole of the body was covered with a heavy scale which matted the coat. Beneath the matted coat there was a rash with raised areas. Mites were found on microscopic examination. The animal was treated with 2 applications of an aqueous suspension of technical benzene hexachloride at a concentration of 0.125 per cent. and appeared to be recovering. It was not possible to follow this case to its conclusion since neither the owner nor the breeder wished to keep the puppy and it was destroyed.

Case 2. London, S.W., January, 1957

A pug puppy aged 3 months was purchased from a pet shop which maintained a high standard of cleanliness. Within one week of purchase, the dog developed a skin irritation and parasites were noticed scattered throughout the hair on the trunk. There was no erythema or rash visible but the skin was thickened and rough and there were yellowish, crusty scales present on the skin and on the hairs. These scaly areas were distributed over the body, being most marked in the mid-dorsal region. The mites were easily visible to the naked eye, and their movement could be seen when the area was disturbed with a comb.

The condition responded to 2 applications of diluted benzyl benzoate emulsion.

Case 3. London, S.W., February, 1957

A male spaniel puppy aged 3 months developed lesions similar to those noted in Case 2. The lesions were distributed over the trunk and there was also slight infestation on the ears and between the toes. The animal was treated with an aqueous suspension of technical benzene hexachloride at a concentration of 0.125 per cent. Two applications were necessary before the irritation was relieved, although no live parasites were visible 4 days after the first dressing. The puppy had been purchased from a pet shop in which wood shavings were used as bedding. Normally cats and rabbits were also sold, but it was stated that none were present at the time of the purchase.

Case 4. London, S.W., September, 1957

A 3-month-old male pug puppy developed a skin irritation within 14 days of purchase. The only visible lesion was an overall scurfiness and the only symptom was that the dog scratched frequently. The animal was treated with 2 applications of an aqueous suspension of technical benzene hexachloride at a concentration of 0.125 per cent. The 2 treatments cured the condition. Cheyletiella mites were identified on microscopic examination.

Concurrent Skin Conditions in the Owners of the Dogs

In all 4 cases the owners of the dogs were affected. The owners of Case 1, two elderly ladies, developed a skin irritation on the arms, chest, and neck. The lesions were characterised by reddish-purple patches and intense irritation. There was little change in the nature of the skin surface. Some difficulty was experienced in clearing the condition in one of the patients, but details of treatment are not known.

The owners of Cases 2, 3, and 4 developed lesions within 2 weeks of purchasing their dogs. They were affected on the arms, neck, and trunk and the lesions consisted of tiny papules surrounded by an area of erythema the size of a sixpence and the irritation was intense and persistent. Treatment with benzyl benzoate emulsion resulted in a fairly rapid response. It appears that the owner of Case 2, who had had the pug in bed with her, was more severely affected than the owner of Case 3.

The medical attendants were in each case reasonably satisfied that the condition was due to a mite infestation. In Case 2, a mite infestation was diagnosed before the veterinary examination of the dog had taken place. This diagnosis was based on the appearance and distribution of the lesions and the fact that a dog with pruritus had been acquired. It is thought that a search for mites on the human patients to confirm the diagnosis was not made.

Identification of the Mite

There was little difficulty in identifying the mite as *Cheyletiella parasitivorax*. As already noted, there were numerous specimens available on the infested animals and they were visible to the naked eye.

Microscopically, the mite is of robust appearance and presents 2 striking features: the presence of a pair of powerful hooks on the palps, and the combs on the ends of the feet which have no claws. The palpal hooks identify it as a Cheyletid mite and the absence of claws and presence of combs on the feet identify it as *Cheyletiella parasitivorax*, the only mite of this group known to infest mammals. Further details can be seen in the accompanying illustrations (Figs. 1 and 2). Full descriptions are given by Baker (1949).

An attempt was made to transfer a number of mites to a rabbit but without success. This may have been due to the fact that the material available was 3 days old before it was placed on its new host.

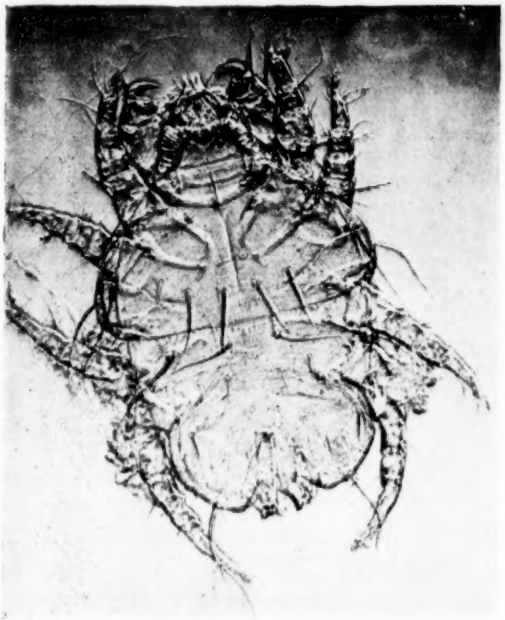

FIG. 1.—*Cheyletiella parasitivorax* (Megnin). Dorsal view.

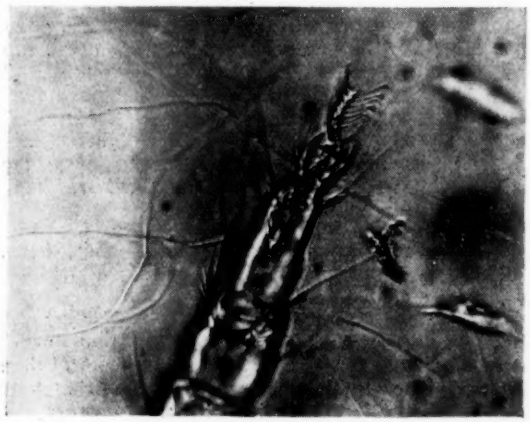

FIG. 2.—*Cheyletiella parasitivorax* (Megnin). View of leg, showing combs.

Discussion

In the absence of any successful transfer experiments, there is no proof that the mite infestation observed was the cause of the skin irritation in the infested dogs and their owners, but the circumstantial evidence is very strongly in favour of the view that this was so. It could be that in the absence of the small mites on which *Cheyletiella parasitivorax* normally feeds, it was forced to feed upon the mammalian host, thus producing the papules observed in the human patients and the skin thickening observed in the dogs. The intense irritation described and observed also points to the fact that feeding took place, as it is in the act of feeding that the mites cause most damage to the skin. The heavy infestation suggests that the mites multiply on the dogs as opposed to chance infestation unable to persist on the animals.

Acknowledgments.—The authors are greatly indebted to Mr. T. H. Michie and Miss M. A. Bentley who sent the material for examination and provided the clinical details of the cases.

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NEW GERMAN RULES FOR CANNED FOODS

A new law which forbids the addition to foodstuffs of any substance "without nutritional value" has just been passed by the West German Bundestag. It completely reverses the principle of the old, which allowed almost any substance to be added to food unless it had been declared dangerous. For more than two years the Bill has been fighting its way painfully through committees, opposed by industrial interests, and supported by consumer organisations and scientists. It was originally presented by the women of the Bundestag in a rare moment of inter-party agreement, but soon split the parties. In the second reading, the Government was defeated by members of its own party on the compulsory declaration of additives on tins or packages.

The compulsory declaration of additives is regarded as important by scientists, who have been pointing out that it is the only way of ensuring that a person can avoid a substance to which he is allergic. It is also supported on the general democratic principle that a citizen should have the right to know what he is buying. Industry fears the public may be reluctant to buy food in packages carrying lists of chemicals.

It will presumably be a test of faith in the commission of the Research Council which is to be responsible for testing and approving chemical additives. This body works largely on the basis of rules laid down by the World Health Organisation and the German Research Council, and it generally approves a substance which has not shown any harmful effects after being tested on animals for 2 years. This is recognised as not foolproof, but is thought to eliminate the main risks.

The Research Council has already done much work on testing chemical additives and has, for instance, approved 25 chemical food dyes. How severe its policy will be in the future remains to be seen, but on the whole, scientists in Germany are in favour of keeping the basic foodstuffs, such as butter, cheese, bread, fish, eggs, and meat, free from chemical additives. The Bill specifically restricts the use of preservation by radiation and the injection of antibiotics into animals about to be slaughtered. *The Times.*

Current Literature

ABSTRACTS

Field Evaluation of Hygromycin B as an Ascaricide in Swine. KELLEY, Jr., G. W., OLSEN, L. S., SUMPTION, L., & ADAMS, J. C. (1958). *Vet. Med.* **53.** No. 3. 120-126.

Tests with hygromycin, produced by *Streptomyces hygroscopicus*, have indicated that it may be an effective anthelmintic in the pig industry. Later tests have shown that the anthelmintic action is primarily due to a fraction of the fermentation product designated hygromycin B. This study was made to evaluate the relative efficiency of hygromycin B and parvex, a piperazine compound, as ascaricides in pigs. Of 314 two-month-old Duroc pigs used, 160 were maintained on concrete platforms and were randomly allotted by weight outcome into 5 replications of 8 experimental treatments, for a total of 20 pigs per treatment. The remaining 154 animals were divided randomly into the 8 treatment groups and placed on 1.5 acre alfalfa pastures. The experiments lasted 76 days during which period the pigs were weighed bi-weekly and food consumption records kept. The treatments were as follows: 1. Untreated controls given the basal ration alone as a test of the production of *Ascaris*-infected pigs. 2. Hygromycin B alone, to test its efficacy as an ascaricide and to show whether rate of gain and feed efficiency were improved. 3. Hygromycin B + Aureomycin, to test compatibility of two antibiotics in the ration and to indicate whether any increased performance was due to antibiotic response or to anthelmintic effect. 4. Hygromycin B + repeated treatment with parvex, to test whether the antibiotic would enhance the rate of gain and feed efficiency of pigs which had had their worms removed by piperazine action. 5. Aureomycin + repeated treatment with parvex, to test whether this antibiotic would produce the same growth response as hygromycin B in pigs from which worms had been removed by parvex. 6. Aureomycin alone, to determine whether or not the growth response would be equal to that of hygromycin B. 7. Repeated treatment with parvex, to test how much increased gain was realised by removing adult ascarids and to compare the performance of these pigs with those being treated with hygromycin B. 8. Repeated treatment with parvex + hygromycin B and Aureomycin, to check the compatibility of the two antibiotics in pigs which had previously had their worms removed by another anthelmintic. Faecal egg counts by the Stoll dilution method and observations on worms expelled were made. These various tests showed that hygromycin B eliminated *Ascaris suum* when fed at the rate of 12,000,000 units per ton of feed for 60 days. Under pasture conditions hygromycin B resulted in 13 lb. added gain per pig. Parvex effectively removed adult ascarids at the second treatment but its first application apparently failed to expel some immature ascarids, because positive, though reduced, egg counts resulted 46 days later. Hygromycin B and Aureomycin were found compatible when both were fed in the same ration and when fed in combination produced slightly greater daily gains than when each was applied singly. J. N. O.

Chronic Copper Toxicosis in Sheep. SUTTER, M. D., RAWSON, D. C., MCKEOWN, J. A., HASKELL, A. R. (1958). *Amer. J. Vet. Res.* **19.** 890-892.

Four hoggs each received 250 mg. copper (750 mg. cuprous iodide) every day and serum copper values were estimated at weekly intervals. Shortly before death occurred, at about 10 weeks, blood levels rose to more than 200 mg. per 100 ml. and they reached about 150 mg. per 100 ml. in about 6 to 7 weeks. The only male sheep included in the test died 106 days after dosing was started. He showed no signs of haemolysis or jaundice although his blood contained about 200 mg. copper per 100 ml., and his liver contained 2,160 p.p.m. (dry matter).

Treatment of Chronic Copper Poisoning in Sheep. PIERSON, R. E., & AANES, W. A. (1958). *J. Amer. Vet. Med. Ass.* **133.** 307-311.

Molybdenum was used as an antidote for copper poisoning in 2 flocks of sheep. In each case, the molybdenum was mixed with sodium sulphate. Two methods of dosing are recommended:—

1. Medicated minerals. Mix 187 lb. coarse common salt with 140 lb. finely ground gypsum (calcium sulphate) and add, by spraying or sprinkling, 2 gall. water containing 1 lb. ammonium molybdate. Open access is allowed.

2. Fifty to 100 mg. ammonium molybdate and 5 to 15 gr. sodium sulphate for each sheep are mixed with water and sprayed on the hay. This is repeated daily for 3 weeks.

A Study of Haemonchus in Cattle and Sheep. HERLICH, H., PORTER, D., KNIGHT, R. K. (1958). *Amer. J. Vet. Res.* **19.** 866.

There were significant morphological differences between the bovine and ovine strains. Infection of calves by the bovine strain was more successful than by the ovine strain, whereas sheep could be more easily infected by the ovine strain.

The authors conclude that there is merit in suggestions by previous workers that the two strains should be given the status of two species.

The Persistence of a Genital Vibrio Infection in a Herd of Sheep after an Outbreak of Vibrionic Abortion. EIDE, G. W., & HELLE, O. (1958). *Amer. J. Vet. Res.* **19.**. 887-889.

During an 18 month period after a spontaneous outbreak of vibrionic abortion, Vibrios were isolated from vaginal mucus and from foetal fluid taken from normal parturitions. The Vibrios appeared to be of the same strain as those isolated from original abortions but their abortifacient effect on guinea-pigs was not so great. The authors conclude that absence of abortions in future pregnancies may be due to lower pathogenicity of the organism or to immunity developed by the ewes. G. B. S. H.

REPORT

Federation of Nigeria, Annual Report of the Department of Veterinary Research, 1956-7.

The Nigerian Department of Veterinary Research, with headquarters at Vom, is a part of the Federal Government and administratively separate from the 3 autonomous regional veterinary departments of Northern, Western, and Eastern Nigeria, but providing for them valuable services in the form of vaccines and biologicals, the training of veterinary assistants, diagnostic services, and assistance in research projects. These services are not, however, restricted to the three regional departments but are used also by other West African territories, including Ghana, Sierra Leone, Gambia, and French West Africa. In addition the Department is responsible for the veterinary services within the township of Lagos.

The veterinary research laboratories at Vom have long enjoyed an international reputation, and in January, 1957, the Department's prestige was further enhanced by the holding there of the first meeting of the West African Regional Committee on Epizootic Diseases, attended by representatives from Ghana, Liberia, the Federation of Nigeria, Gambia, Sierra Leone, and the French, Belgian, and Portuguese territories in West Africa. The Laboratories are also recognised by the U.K. Institute of Medical Laboratory Technology as an approved place for training, and as the Intermediate examination of that Institute is now held annually in Nigeria, local African laboratory technicians are able to take this first step towards Associateship of the Institute without leaving Nigeria, an arrangement that has given great encouragement to the junior staff in the Department.

In his clear and comprehensive report the Director of Veterinary Research, Dr. J. I. Taylor, PH.D., B.SC., M.R.C.V.S., gives an excellent account of his Department's activities during the year. Recruitment of professional and qualified technical staff improved, and by the end of the year he had 14 veterinary surgeons as research or education officers, a biochemist, 6 qualified laboratory technologists, and 60 African junior laboratory and livestock staff. A new central library and administration block was completed and several minor installations added to the Department's premises; the complaint is made, however, that quarters, stores accommodation, laboratories, and animal houses still lag behind present needs.

An interesting feature of the Department is a mobile laboratory. This equipment, which it is claimed has well justified its cost, has enabled detailed work to be carried out in the field, far from the main laboratories, and so eliminated much of the time and trouble entailed in despatching numerous specimens to the central laboratory.

The main activity of the Division of Virology and Bacteriology was again the production of vaccines. Eleven different vaccines, totalling nearly 6,000,000 doses, were produced, of which nearly 5,000,000 were issued. Dried goat virus rinderpest vaccine and blackquarter vaccine were the largest commitments, but there was a marked increase in the demand for Newcastle disease vaccine and there are signs that this will increase still further. The Director's claim, "It would be true to state that, in the supply of biologicals, the Veterinary Research Laboratories now supply by far the greater part of the requirements of the 4 British West African territories and that with the steadily expanding staff and facilities of the laboratories, the foreseeable needs of these territories can be supplied without great difficulty," is one in which the Department can take justifiable pride.

Although dried goat virus was the chief rinderpest vaccine produced a small amount of lapinised vaccine was also made. Some observations were made on an avianised strain of rinderpest virus received from Damascus, but certain definite drawbacks in its use have yet to be overcome.

Other virus diseases which received attention included rabies, psittacosis, foot-and-mouth disease, and equine virus diseases (not specified) Several bovine diseases for which viruses were thought to be responsible were also investigated and two virus strains from them are under study.

Bacterial vaccines produced included anthrax, blackquarter, haemorrhagic septicaemia, Strain 19, fowl cholera, and fowl typhoid. Work was conducted on the preparation of a dried contagious bovine pleuropneumonia culture vaccine with adjuvants, and also on improving the stained antigen used for field diagnosis. In each case promising results were obtained.

Included in a wide variety of parasitological work were experiments to test the theory that *Neoascaris vitulorum* infection of calves is normally prenatal, and also how best to use piperazine adipate against this helminth under Nigerian field conditions.

The veterinary school continued its valuable contribution of training African students as veterinary assistants, of whom there are now over 600 in Nigeria. About 20 Nigerians qualify each year, approximately half of those who start the course. In addition students from Ghana and the Cameroons were also in training during the year.

REVISED TUBERCULOSIS (ATTESTED HERDS) SCHEME, 1958

A revised Tuberculosis (Attested Herds) Scheme has been made for England and Wales to correct minor technical difficulties arising out of the operation of the 1950 scheme. There are no amendments of substance. The revised scheme came into operation on December 1st. Corresponding action is being taken in Scotland.

Existing attested or supervised herds will continue to be treated as such. In future, claims for capitation bonus must normally be made within 3 months of the June and December statutory return dates. Copies of the Scheme (Statutory Instrument 1958. No. 1912) may be purchased, price 6d. (8d. by post), from H.M. Stationery Office.

News and Comment

FUTURE OF THE ROYAL ARMY VETERINARY CORPS

It is now known that, as a result of a recent Army Council decision, the future of the Royal Army Veterinary Corps as an integral part of the reorganised army is assured.

The intention is that the Corps, which will continue to come directly under the administration of the Quarter-Master-General to the Forces, will perform its present functions with the exception of responsibility for operating Guard Dog Units, which will pass to the Royal Military Police.

The Corps will, therefore, continue to be responsible for the purchase and initial training of remounts, for conducting the advanced course for equitation instructors of other arms, for the purchase and training of war dogs, and, of course, for the veterinary supervision and treatment of all army animals.

The R.A.V.C. Training Centre and Depot, at Melton Mowbray will remain as the Headquarters of the Corps and R.A.V.C. War Dog Training Units will continue to be maintained in Germany and Malaya.

It is anticipated that the present establishment of Regular and Short Service Regular Officers will be increased, National Service Officers being progressively replaced, and that the total number of other ranks will correspond approximately to the pre-1939 figure.

Our readers may recall that, some months ago, the United States Secretary of Defence recommended the disbanding of the American army veterinary services. A report in the current number of the *California Veterinarian* states that this recommendation is to be rescinded.

ELECTION OF MEMBERS OF THE R.C.V.S. COUNCIL

In accordance with the provisions of the Veterinary Surgeons Act, 1948, 6 members of the said Council, who must be members of the Royal College, will be elected in 1959 by members of the Royal College residing outside the Republic of Ireland.

Five present members of Council will retire at the Annual General Meeting in 1959 and are eligible for re-election, namely: Professor H. G. Lamont, J. B. White, Esq., Dr. W. R. Wooldridge, H. M. Wilson, Esq., and Professor T. J. Bosworth.

There is one further vacancy caused by the retirement of Mr. R. H. Smythe.

The term of office of the 5 persons elected in the place of the 5 members retiring by rotation will be 4 years. The term of office of the person elected in the place of Mr. R. H. Smythe will be one year.

Nominations of persons for election to the Council must be submitted in writing on a form which may be obtained from the Registrar, and which must be returned to him duly completed before January 31st, 1959.

Each such nomination form must bear the signature of the proposer and seconder, who must not be present members of Council, and must be counter-signed by the nominee.

CENTENARY OF THE GENERAL MEDICAL COUNCIL

The Centenary Meeting of the General Medical Council, was held on November 27th. The President and Registrar of the Royal College of Veterinary Surgeons were present at the Guildhall banquet that evening. It is interesting to note that, whilst our own Royal College is the senior in foundation—1844 as opposed to 1858—the General Medical Council derived its statutory powers of removing a name from the Register before its sister professions of dentistry (1878) and veterinary surgery (1881).

VETERINARY SYMPOSIUM IN ISRAEL

A Veterinary Symposium will be held in Israel in May, 1959, and British members are most cordially invited to attend. Speakers of international reputation will read papers.

All those participating in the Symposium are invited to spend from May 3rd to 9th as the personal house-guests of a farming family on any one of the unique forms of settlement in Israel, free of charge. The Symposium itself will be held from May 10th to 12th, and May 13th will be spent in celebrating Israel's Day of Independence. The following four days will be devoted to organised tours to different parts of the country.

Travel arrangements to, and accommodation in, Israel are being handled by Messrs. Peltours Ltd., 29 Duke Street, London, W.1, who will be pleased to deal with any enquiries. The Veterinary Institute in Beit Dagan will also supply any further information on the Symposium which may be required.

EXPERT PANEL ON TICK-BORNE DISEASES

In 1956 a conference on the Control of Tick-Borne Diseases of Livestock was held in Rome. It was organised jointly by the Food and Agriculture Organisation of the United Nations (F.A.O.) and the International Office of Epizootics (I.O.E.).

Arising out of that conference an expert panel was set up to study and report on the problem.

The first meetings of the F.A.O. Panel on Tick-Borne Diseases took place at the Royal College of Veterinary Surgeons in London from November 24th to 29th, 1958, and at the conclusion the general feeling was expressed by one of the American representatives, who paid a tribute to the pleasure of working in such dignified surroundings as those of the College and to the help given by the College staff in making all the preliminary arrangements and in assisting, during the deliberations, the F.A.O. secretariat, who had come from Rome.

Eighteen papers were submitted for consideration by the Panel which devoted 4 days to discussions on tick surveys and mapping, laboratory techniques,

the control of ticks and recent developments in regard to tick-borne diseases.

The Panel brings together experts from many parts of the world and the pooling of information and interchange of ideas must, in the long run, yield considerable benefits. The discussions on tick control illustrated the complexity of this problem and showed the diversity in tick species, methods of animal husbandry and methods of tick control which exist in different countries. Of particular interest was the discussion on the development of strains of ticks resistant to insecticides (or "ixodicides" as the Panel preferred to call them). From the information presented it was apparent that the resistance problem was concerned only with the one host ticks of the *Boophilus* genus and that the many other important African ticks had shown no tendency to develop resistant strains.

The delegates were received at the Dorchester, at a cocktail party, by Lord Waldegrave, acting on behalf of the Minister of Agriculture. On the Tuesday, Professor Bosworth, President of the Royal College, received the guests at a cocktail party held at 10, Red Lion Square. The ixodicides dispensed on the second occasion were a worthy match for those dispensed on the first and no resistance was encountered.

The members of the Panel were: Dr. S. F. Barnett, Kenya; Dr. R. M. du Toit, South Africa; Dr. K. Enigk, Germany; Dr. A. O. Foster, U.S.A.; Dr. H. Hoogstraal, U.S. Naval Research (formerly Cairo); Dr. C. R. Mulhearn, Australia; Dr. A. Rafyi, Iran; Dr. R. F. Riek, Australia, and Dr. J. Tendeiro, Portugal.

The following attended the meetings as observers:—

J. R. Busvine (London School of Tropical Hygiene), A. W. Chalmers (Edinburgh), R. F. Coughlan (Malaya), M. Crawford, S. B. Kendall and J. L. McGirr (Weybridge), R. N. T. W. Fiennes and R. J. Guyaux (representing C.C.T.A.), H. E. Harbour (representing The British Veterinary Association), J. N. Ritchie, Chief Veterinary Officer, and R. Vittoz, I.O.E.).

The Secretariat was led by Sir Thomas Dalling, assisted by N. R. Reid (F.A.O.) and Dr. J. Euzéby (I.O.E.). Dr. S. F. Barnett was elected Chairman and Dr. A. O. Foster and Dr. A. Rafyi Vice-Chairmen.

XVIth INTERNATIONAL VETERINARY CONGRESS

All members of the United Kingdom who have submitted communications for presentation to the International Congress in Madrid might like to know that their communications of 600 words have been accepted. It is understood, however, that they are only accepted on condition that the author is present at the Congress in order to give his communication.

It is also suggested that members from the U.K. who intend to be present at the Congress should send in their forms of application direct to Professor Carda, Villanueva 11, Madrid, together with the requisite fees: Full membership 600 pesetas (£5); Associate Members 300 pesetas (£2 10s.). At the same time it would be appreciated if those intending to visit Madrid for the Congress would notify Dr. Wooldridge when they have sent in their forms of application to Professor Carda so that a check can be kept of the numbers going from this country.

SLAUGHTER OF PIGS (ANAESTHESIA) REGULATIONS, 1958

Pigs may in future be anaesthetised before being slaughtered. This is the effect of regulations made on November 24th, by the Minister of Agriculture, permitting pigs to be anaesthetised by carbon dioxide gas in special installations at slaughterhouses in England and Wales. The regulations came into operation on December 1st. The process is already used abroad. Although there are several designs of installation they all work on the principle of conveying the pig into a chamber containing carbon dioxide where it becomes insensible in a few moments. It is then killed before it can recover consciousness.

All available evidence is that, operated with reasonable care, this process is humane and the Minister is satisfied that the carbon dioxide has no harmful effect on the meat. We shall publish a technical note on this matter next week.

M.M.B. BREEDING EXPERT

An experiment for producing twin calves by artificial insemination from beef cattle will begin in Montgomeryshire on New Year's Day. It is being launched by the Milk Marketing Board as a development of laboratory research at Cambridge. The Board's scientific adviser, Dr. Joseph Edwards, said: "It might be an historic development because it is the first time such an experiment has been made under commercial conditions anywhere in the world.

"If the experiment is a success it is primarily to the beef-breeder that it will appeal, for two calves a year in place of one will make a great difference to his rearing economy.

"It is important to emphasise that positive results are not guaranteed, and that the development is a field experiment because research work on the subject cannot be carried any further in laboratory conditions in this country."

The trial will last for 2 years, and it is hoped to inseminate about 2,000 cows in the first 12 months.

UNIVERSITY NEWS

Bristol

The following appointments are announced:—

L. W. Greenham, B.V.SC., B.SC., M.R.C.V.S., Assistant Bacteriologist, Department of Bacteriology. J. S. E. David, B.V.SC., M.R.C.V.S., Research Assistant in Veterinary Surgery. J. M. Bedford, B.A., VET.M.B., M.R.C.V.S., Junior Fellow in Veterinary Surgery and G. F. Rendall, B.V.SC., M.R.C.V.S., Junior Fellow in Veterinary Surgery.

THE REGISTER OF VETERINARY SURGEONS

Dr. Richard Francis Ray Coughlan, D.V.M.(TEXAS), B.V.SC.(SYDNEY), Veterinary Research Institute, Ipoh, Malaya, was registered in the Commonwealth List of the Register of Veterinary Surgeons on November 25th, 1958.

THE SUPPLEMENT

The current issue of the SUPPLEMENT to THE VETERINARY RECORD will shortly go to press. Hon. Secretaries of Divisions and others who wish to have material published are asked to be good enough to send it to the Editor not later than first post on December 12th.

PERSONAL

Mr. D. H. Deans, veterinary officer, has been transferred from Truro to Norwich.

Mr. J. A. Grisedale, veterinary officer, has been transferred from Haverfordwest to Beverley.

Mr. J. R. Fletcher, Veterinary Officer, who was stationed at Mold has resigned.

Births

DUGUID.—On November 28th, 1958, at the Bromhead Nursing Home, Lincoln, to Elizabeth, wife of Ian M. Duguid, B.SC., M.R.C.V.S., a daughter, sister for Gillian and Lynne.

WOOTTON.—On November 20th, 1958, to Ann (née Tippett) wife of John Wootton, M.R.C.V.S., of 1 Spinney Drive, Kettering, Northants, a son, Nicholas Croft.

COMING EVENTS

December

6th (Sat.) Annual General Meeting of the B.S.A.V.A. Southern Region at the Royal Hotel, Winchester, 7.30 p.m.

9th (Tues.) Meeting of the East Midlands Division at the Nottingham University School of Agriculture, Sutton Bonington, 2.15 p.m.

10th (Wed.) A General Meeting of the South-East Midlands Veterinary Medical Association at Franklin's Gardens Hotel, Northampton, 7.30 p.m.
Meeting of the A.V.T. and R.W's Scottish Regional Group in the Pathology Lecture Theatre, Royal (Dick) School of Veterinary Studies, Edinburgh, 2.15 p.m.

11th (Thurs.) Meeting of the West of Scotland Division in the University Veterinary School, 83 Buccleuch Street, Glasgow, C.3.

12th (Fri.) Annual Dinner-Dance of the North of England Veterinary Medical Association in the Three Tuns Hotel, Durham, 7.30 p.m.
General Meeting of the Midland Counties Veterinary Association at the Birmingham Medical Institute, 36 Harborne Road, Birmingham, 15.
Meeting of the Shropshire Veterinary Club at the Oak Hotel, Shelton, Shrewsbury, 8 p.m.

17th (Wed.) Annual General Meeting of the Warwickshire Veterinary Club in the Regent Hotel, Leamington Spa, 8 p.m.

18th (Thurs.) Dinner-Dance of the Dumfries and Galloway Division, V.V.B.F. Ladies' Guild in the County Hotel, Dumfries, 8 p.m.
Ordinary General Meeting of the South-Eastern Veterinary Association at the Royal Star Hotel, Maidstone, 2.30 p.m.

ADDRESSES OF DISEASE INFECTED PREMISES

The list given below indicates, first the county in which are situated the premises on which disease has been confirmed, followed by the postal address and date of outbreak.

Anthrax

Devon. Poole Farm, Crownhill, Plymouth (Dec. 1).
Leics. Saracens Head Farm, Heath End, Ashby-de-la-Zouch (Nov. 26).
Northants. Marholm Farm, Peterborough (Nov. 25).
Stirling. Jaw Farm, Fintry, Glasgow (Dec. 1).
Wigtown. Mains of Aires, Stranraer; Awkirk, Stranraer (Dec. 1).

Fowl Pest

Essex. Roast Farm, Clavering, Saffron Walden (Nov. 29).
Kent. Iden Green Farm, Benenden, Cranbrook (Dec. 1).
Norfolk. Mill Farm, Deopham, Wymondham; West Park Farm, Ickburgh, Thetford (Nov. 26); Half Moon, Deopham; Dairy Farm, Thrandeston, Diss; The Paddock, Deopham Green, Deopham (Nov. 28); Lower Billingford, Harleston Road, Billingford; Lodge Farm, Thrandeston; Old Blacksmith Arms, Deopham Green, Deopham; The Lodge, Oakley Park, Diss; The Mill, Palgrave, Diss (Nov. 29); Mayfield Farm, Besthorpe, Attleborough; 59, Goldbrook Cottages, Hoxne, Diss (Nov. 30); The Corals, Besthorpe, Attleborough; Nestfield Farm, Mattishall, Dereham (Dec. 1).

Swine Fever

Ches. Eddisbury Lodge, Delamere, Northwich (Nov. 25).
Devon. Sowton Barton, Dunsford, Exeter (Nov. 25); Higher Hoopern Farm, Pennsylvania, Exeter (Nov. 27).
Dorset. Hill Farm, Iwerne Minster, Blandford (Nov. 26).
Flints. Groesfford Farm, Lixwm, Mold (Nov. 26).
Herts. Kentish Lane Piggeries, Hatfield (Dec. 1).
Kent. Evelyn Cottage, Downs Road, Northfleet, Gravesend (Nov. 25); Hethe Place Farm, Cowden, Edenbridge (Nov. 27); North Frith, Hadlow, Tonbridge (Nov. 28).
Norfolk. Grange Farm, Bacton, Norwich (Nov. 25); The Mill, Wreningham, Norwich (Nov. 27); Village Farm, Besthorpe, Attleborough; 53, Ivy Road, Spixworth; Allotments, High Mill Road, Cobham, Gt. Yarmouth; The Folly, Hingham, Wymondham (Dec. 1).
Northampton. Weedon Road Allotments, Duston (Dec. 1).
Somerset. Leyland Farm, Wellington (Dec. 1).
Suffolk. Cansell Grove Farm, Rattlesden, Bury St. Edmunds (Nov. 28).
Sussex. Dew Farm, Peasmarsh (Nov. 28).
Worcs. Hawkbatch Farm, Arley, Bewdley (Dec. 1).
Yorks. Farfield Farm, East Keswick, Leeds (Dec. 1).

DISEASES OF ANIMALS ACT, 1950—GREAT BRITAIN

Summary of Returns of Confirmed Outbreaks of Scheduled (Notifiable) Diseases

Period		Anthrax	Atrophic Rhinitis	Foot-and-Mouth	Fowl Pest	Sheep Scab	Swine Fever
1st to 15th November, 1958		2	—	—	25	—	38
Corresponding period in	1957	13	1	8	72	—	43
	1956	14	—	7	70	—	17
	1955	57	—	—	49	—	50
1st January to 15th November, 1958 ...		139	5	116	642	—	1,107
Corresponding period in	1957	290	8	125	816	—	852
	1956	1,197	11	135	673	—	667
	1955	687	6	6	514	—	1,274

Letters to the Editor

The views expressed in letters addressed to the Editor represent the personal opinions of the writer only and their publication does not imply endorsement by the B.V.A.

SCIENTIFIC

Use of X-irradiated Larvae for Immunisation of Dogs

Sir,—In canine hookworm infections (*Uncinaria stenocephala*) it is possible to induce immunity by the administration of X-irradiated third stage larvae. Six dogs were vaccinated with 1,000 larvae subjected to 40,000 roentgens. One hundred and twenty-eight days later, these animals and a further 6 controls of the same age were given 1,000 normal infective larvae. All were sacrificed 22 days later. The mean number of worms recovered from the control group was 530 and the corresponding figure for vaccinates was 32. Experiments are at present in progress to test the efficacy of a double vaccination procedure.

It is possible that this method might be developed for use in the field in vaccinating against hookworm infections in this and other species.

Yours faithfully,
C. DOW,
W. F. H. JARRETT,
F. W. JENNINGS,
W. I. M. McINTYRE,
W. MULLIGAN.

Veterinary Hospital,
Bearsden Road,
Bearsden, Glasgow.
November 7th, 1958

ECBO Viruses of Cattle

Sir,—In America Kunin and Minuse (1958) have recently described the isolation of 8 serologically similar viruses from the faeces of healthy cows, and have called these agents enteric cytopathogenic bovine orphan (ECBO) viruses (Kunin & Minuse, 1957). Klein and Earley (1957) have isolated 35 filterable agents in calf kidney tissue culture from animals aged 6 months to 2 years, and in a more recent publication Klein (1958) has increased this number to 75.

In N. Ireland during 1957 and 1958 112 cytopathogenic agents have been isolated in this laboratory from bovine faeces in embryo calf kidney culture. Faecal specimens were taken monthly for 9 months from 4 herds which showed no signs of clinical disease during this period. At the start of the experiment the calves, which were of both sexes, ranged in age from 4 to 7 months. These 112 agents fall into at least 3 serological types as judged by virus neutralisation tests in tissue culture. One of the virus types VG(5)27 appears to be serologically indistinguishable from LC R4 ECBO virus described by Kunin and Minuse (1958). The results of a cross neutralisation test in tissue culture between these two viruses is presented in the Table. LC R4 virus and anti-serum were kindly supplied by Dr. Kunin.

SHOWING CROSS NEUTRALISATION TEST BETWEEN VG(5)27 (N. IRELAND) AND LC R4 (MICHIGAN).

Immune Serum	Log_{10} virus neutralised	
	VG(5)27	LC R4
VG(5)27	4.5	3.25
LC R4	4.25	3.5

Whether the ECBO viruses ever cause disease in cattle remains to be determined, but by analogy with the enteric cytopathogenic human orphan (ECHO) viruses some of which have already been shown the cause of human disease, it is unlikely that ECBO viruses will long remain of laboratory interest only.

Yours faithfully,
J. B. McFERRAN.

Department of Microbiology,
Institute of Pathology,
Queen's University,
Belfast.
November 25th, 1958

References

KLEIN, M., & EARLEY, E. (1957). *Bact. Proc.* **73.**
———. (1958). *Ann. N.Y. Acad Sci.* **70.** 3.
KUNIN, C. M., & MINUSE, E. (1957). *Pub. Health Rep.* **72.** 3.
———, & ———. (1958). *J. Immunol.* **80.** 1.

GENERAL

Hypocalcaemia and Hypomagnesaemia in Cattle

Sir,—The series of refresher articles is extremely valuable to the clinician and the student. I was particularly interested in Dr. Marr's article on hypocalcaemia and hypomagnesaemia in cattle. He suggests that the risk in the intravenous injection of magnesium sulphate solution is due to the toxic action of magnesium ions on the heart. While no one would dispute that magnesium ions do have an effect upon the heart I have always understood that the chief risk was due to their depression of the central nervous system.

This supported by the work of Bergman and Sellers (1953 to 1954), and is apparently accepted by Meyer Jones (1957). The depressant action of magnesium ions upon the central nervous system is antagonised by calcium ions so that, theoretically at least, one can control the effects of too rapid administration.

I shall always remember my most spectacular case of acute hypomagnesaemia. The Friesian cow was standing in a stall exhibiting typical symptoms. The clinical examination was made carefully and quietly without provoking any untoward reaction, but insertion of a needle through the skin prior to injection was a sufficient stimulus to produce

immediate convulsion and death. Needless to say the cowman was very much impressed, and I must admit that I had not expected such a rapid termination of the case.

Yours faithfully,
J. STRATTON.

Royal Veterinary College,
Department of Medicine,
Royal College Street,
London, N.W.1.
November 25th, 1958

References

BERGMAN, E. N., & SELLERS, A. F. (1953). *Amer. J. vet. Res.* **14.** 520.
———, & ———. (1954). *Ibid.* **15.** 25.
MEYER JONES, L. (1957). "Veterinary Pharmacology and Therapeutics." 2nd ed. Iowa State College Press, Ames, Iowa. p.172.

Sir,—In Dr. Marr's refresher article on hypocalcaemia and hypomagnesaemia in cattle (November 22nd) he suggests that in cases of milk fever where the hypocalcaemia is apparently relieved by injection therapy and the cow remains recumbent, yet complicating conditions such as septic metritis or mastitis, fractured pelvis, obturator paralysis, etc. are not apparent, then udder inflation is worth trying. I suggest that, in many such cases, the hypocalcaemia may be relieved, but the hypophosphataemia is not.

Udder inflation has the effect of increasing blood phosphate content, but it is more effective to dose the animal with inorganic phosphate.

When the hypocalcaemia has been corrected by injection therapy, the cow commences to eat, yet remains recumbent because of an apparent lack of muscle power, it is the custom in this practice to give the animal a course of sodium acid phosphate. This is given *per os* at the rate of 3 oz. daily.

We find that the great majority of such cases respond. I believe that this treatment was first suggested by Barker of Hereford.

Yours faithfully,
BRIAN WICKS.

11, Langley Road,
Chippenham,
Wilts.
November 26th, 1958

Induction of Anaesthesia using Pentobarbitone Intrathoracically

Sir,—I wish to ally myself with all that Mr. W. A. Scott says on the subject of intrathoracic administration of pentobarbitone in the cat. I have used this method as a routine for several years and found it to be safe, simple and effective. I venture to add that intravenous pentobarbitone is not necessarily as safe and simple in the cat as Mr. J. S. Heath suggests for the following reasons :—

1. The small volume normally used allows of little margin of error if undue haste is used—a natural tendency where the animal struggles.

2. The transient period of excitement where administration is too cautious may render effective restraint extremely difficult.

Intravenous use of dilute thiopentone would seem to obviate these difficulties, but frequently requires restraint by an assistant, and I am sure that even the most expert intravenous administrator must occasionally meet his Waterloo with certain feline patients.

Yours faithfully,
ARCHD. T. DICKIE.

17, Barrhead Road,
Newton Mearns.
November 24th, 1958

Sir,—As one privileged to watch Professor Wright demonstrate the use of pentobarbitone intravenously in cats—if my memory is correct, it was at Scarborough in the early thirties—I have never entertained any doubts as to its efficiency.

Nevertheless, around that period I adopted the intrathoracic method and persisted in it for at least 25 years and over that time many hundreds of cats have been so anaesthetised with satisfactory results and without complications or regrets.

In my view, expressions such as "slap-happy," "lackadaisical" and so on are in ill-taste and out of place in veterinary literature. Constructive criticism is always good provided it is kept within the limits of scientific language.

Yours faithfully,
ARTHUR R. SMYTHE.

Fishpond Cottage,
Wembury, Nr. Plymouth.
November 25th, 1958

Bovine Ketosis (Acetonaemia)

Sir,—Having tried, with a fair degree of failure, most of the orthodox treatments for acetonaemia in cattle, including the more expensive cortisone derivatives, may I commend to your readers the following treatment costing 3d. per dose, or 1s. 6d. for the course of 3 days' treatment?

To confirm that I am treating ketosis, having a poor sense of smell, a milk sample is always tested with Rothera's reagent, and all positive results are treated twice daily for 3 days with 1 oz. of potassium chlorate in one pint of cold water, *per os*. This is the average dose for a cow weighing 1,000 lb. This information was passed on to me by the V.I.O. at Wye, Ashford, Kent, and since March, 1957, I have had 100 per cent. successful results with this 3-day treatment alone.

I do not pretend to know the biochemical action of this old drug, but under the subject "A Suggested New Feature" in recent issues of THE RECORD, I must disagree with Mr. J. N. Wright, in that one must have scientific backing before making statements in THE RECORD. I make no apology for the success of this treatment sounding like a Russian election result.

Recently, in Westminster, the merits of advertising have been discussed, and I am hopeful that this economy in the treatment of an ever increasing incidence of acetonaemia will benefit the farmer, and later the housewife and you and me, without having to support the cost of intensive advertising

programmes advocating the use of the more recent costly preparations, and blinding me with scientific explanations.

Yours faithfully,
F. D. GOOD.

Mill Farm House,
Ashford Road,
Tenterden,
Kent.
November 25th, 1958

"Tranquillising" for Shows

Sir,—I had expected a spate of answers in support of Mrs. Robinson's excellent letter of November 8th, but, so far, there has been only one.

To me, it seems remarkable that any veterinary surgeons are willing to co-operate with owners who are guilty, in my view, of an action calculated to mislead. The tranquillising of a neurotic dog in order that it may appear normal in the show ring seems to me to be comparable with the doping of a race-horse or greyhound; the degree varies only in that less money, in fewer pockets, is involved.

Miss James says that she gives tranquillisers for humane reasons, but surely it is more humane to do all we can to discourage the breeding of future neurotics—if it is not too late already—for the really nervous dog must have a wretched life even if it has a good home and is spared the show ring.

It is easy to blame neurotic owners for neurotic dogs but I think we all know of examples of sensible old clients acquiring puppies which are unreasonably nervous and/or bad tempered from a very early age, and this can very often be traced to a known bad strain in either sire or dam. In some breeds one can hardly recognise the characteristic temperament which once made them so desirable either for work or play.

I think this subject is important now, for in the past doping was far more likely to be discovered. To-day, the skilfully tranquillised dog can appear normal with no side effects in spite of the fact that he is really of "unsound mind," perhaps a sort of "canine maniac depressive," or something even nastier and therefore far more of a menace to his progeny than a dog with one of the anatomical defects which we all deplore.

Yours faithfully,
ROSEMARY WELCH.

23, Pheasants Way,
Rickmansworth,
Herts.

Mycotic Dermatitis of Sheep

Sir,—The purpose of this letter is to record the occurrence of mycotic dermatitis in Northern Ireland so that veterinary surgeons and others concerned with sheep in the area may be aware of its existence.

As the result of examination of a specimen of wool submitted to the laboratory an investigation was made. The animal from which the sample was taken was a Suffolk ram, under 2 years old, and bred in Northern Ireland. The lesions of lumpy wool covered all the back and sides but not the neck or belly. The waxy scab-like material of the infection was at least half an inch deep over the back, and when the wool was plucked out it came readily, leaving a raw surface. The hairy parts of the face, poll, ears, tip of scrotum and legs bore many small, light coloured nodules or papillae. Some of the lesions on the lower parts of the legs were abraded. It was said that the condition was only noticed some 3 weeks after dipping and was not evident at the time of purchase. The animal had come on to the farm about 2 months before, since when it had been with a flock of 50 ewes. So far as could be ascertained the skin condition, although very severe, had not affected the ram's libido or fertility. The ewes were examined clinically and 2 very mild cases were found.

Prior to his entry to the present flock the ram had spent a year in another flock which was made available for examination. Clinical evidence of mycotic dermatitis was not found in this second flock. This cannot, however, be regarded as conclusive in view of the movements of sheep from the farm although the owner asserted he had seen no skin condition in his flock at any time.

In the laboratory, wool specimens from the ram have shown the microscopic picture associated with *Dermatophilus dermatonomus* infection. On culture on 5 per cent. ox blood agar at 37° C. the organism has exhibited the typical cultural and microscopic appearances as described by Austwick and Davies (B.V.A. Congress, 1958).

We would like to take this opportunity of thanking Mr. P. Austwick, Weybridge, for private discussions in 1957 and, more recently, for helpful correspondence and specimens.

Yours faithfully,
J. T. BAXTER,
J. F. GRACEY.

Veterinary Research Division,
The Farm,
Stormont, Belfast.
November 25th, 1958

Navicular Disease

Sir,—I was interested to read Mr. A. H. Robb's letter and his conclusion that navicular disease is much more common than he thought, and that it can be diagnosed at a very early stage by X-rays.

Having thus diagnosed the condition would Mr. Robb tell us what he then does about it?

Yours faithfully,
J. CARMICHAEL.

Boarded Barns Farm,
Ongar, Essex.
November 23rd, 1958

Obstetrics in the Ewe

Sir,—I should like to congratulate Mr. T. Hughes Ellis on his excellent thesis, but surely such a thesis presented for a Fellowship, should use scientific anatomical terms throughout and not mix them with laymen's terms? I refer particularly to the term "womb" which appears many times alongside the correct scientific name for other parts of the genital tract. I agree that it is very difficult for practitioners,

after dealing with farmers all day and using colloquialisms to them, not to lapse into the vernacular at times, but surely such a paper should keep to strictly scientific terms?

I do not intend this as a criticism of the thesis as a whole, which I found to be extremely interesting and instructive, but as a criticism of the tendency of veterinary surgeons in practice to use these lay terms when discussing cases with professional colleagues. One particularly irritating expression to me is "washing-out a cow."

As one who has had limited experience with sheep (compared with that of Mr. Ellis), I should be grateful to hear if other practitioners have had the same recovery rate in ewes after correction of uterine prolapse—100 per cent. in Mr. Ellis's 30 cases. My experience has been the exact opposite—the ewe invariably continuing to strain and prolapsing the uterus again with extensive damage to the vulval labia due to the tearing out of the vulval sutures. I have had this happen in about 6 cases in the last 4 years. In none of these have I used epidural anaesthesia. Is this where my fault lies?

Yours faithfully,
HARVEY M. F. MAYNARD.

55, South Court Avenue,
Dorchester, Dorset.
November 23rd, 1958

Sir,—I was most interested to read Mr. T. Hughes Ellis's paper on obstetrics in the ewe, and would like to make some observations based on about 120 lambing cases over the last 2 seasons, only the latter 50 cases being recorded in detail.

In this district I find that about 25 per cent. of cases are due to undilated cervix, and 75 per cent. due to foetal abnormality or malpresentation. In only about 4 per cent. of cases is caesarean section performed.

Ewe mortality over a season is about 6 per cent., including those numerous cases which have had heavy-handed lay interference before veterinary advice is sought.

In cases of undilated cervix it is found that 85 per cent. can be dilated manually, as long as two finger-tips can be inserted through the cervix. The well-soaped fingers are inserted and then rotated with slight pressure until the cervix dilates enough to admit the hand. This procedure may take up to 20 minutes, but usually takes far less time. If done carefully there will be no adverse effect on the ewe, but once the hand has been passed into the uterus, speed seems essential, the actual time taken to lamb the ewe should not exceed 10 minutes.

It would appear that many cases of undilated cervix are due to lack of pressure, normally exerted by the foetus and membranes on the cervix. This theory is supported by the fact that 50 per cent. of cases were preceded by prolapse of the vagina at some stage in gestation. Thus the normal uterine contractions were unable to push the foetus and membranes as a wedge into the cervix, as this was no longer held rigid. It would seem, therefore, that the obstetrician must apply this dilating action with his own hand.

It has been found that removal of the fore legs of a lamb is of considerable use, especially when dealing with dead lambs. A leg is drawn through the vulva and a skin incision made round the leg above the carpus, the skin pushed up the leg and traction applied to the foot. The leg including the scapula draws easily through the skin from the body.

The same procedure is carried out on the other leg. Thus the bulk of the lamb is considerably reduced, facilitating the delivery of cases grossly oversize and with displacements of the head.

Yours faithfully,
D. K. BLACKMORE.

Stable Flat,
Braunston Road,
Oakham, Rutland.
November 23rd, 1958

Sir,—My method of using a piece of fairly firm but light string as an aid in correcting flexion of the head, or simply in traction on the head, in lambing cases, may interest Mr. Ellis or readers of his "Observations on Some Aspects of Obstetrics in the Ewe."

A simple loop of string is carried into the uterus, and whilst the two free ends are held with slight traction in the free hand, the loop is pushed by the joints of the fingers over the crown of the head and manipulated behind the ears.

Working with the hand above the two sides of the now fixed loop, so as to ensure maintenance of the loop behind the ears whilst traction is applied, the nose is directed towards the pelvis. Once it is in the pelvis the position of the head is such that the string maintains its grip firmly behind the ears and will remain fixed no matter how strong the traction until the ears pass out of the vulva.

A light rope may usefully be used in the same way behind the ears of the calf, but unfortunately a similar loop cannot be secured on the head of a piglet.

Yours faithfully,
S. G. STEWART.

Killinchy,
Belfast, N.1.
November 25th, 1958

Twin Calves and Post-retention Metritis

Sir,—Having read of the intention of the Milk Marketing Board to conduct experiments to make beef cows produce twin calves by artificial insemination, I am interested to know if the Board's scientific adviser is able to advise others how to ensure that the majority of cows producing twin calves will not retain at least one placenta.

I feel sure that plenty of veterinary surgeons as well as farmers, will agree with me that twin calves are a menace, being responsible for post-retention metritis.

Yours faithfully,
H. NORMAN BATEMAN.

1a, Quay Street,
Woodbridge.
November 26th, 1958